

OPTICAL PROCESSING APPARATUS AND OPTICAL PROCESSING

METHOD *This application is a DIV of 10/035 441 1/4/2002 Pat 6 716 283
which is a DIV of 09/547, 716 4/11/2000 Pat 6, 336, 969
which is a DIV of 08/457, 648 5/26/1995 Pat 6, 059, 873*

BACKGROUND OF THE INVENTION

The present invention relates to a technique of evaluating a processing effect of various processes using laser light. The invention also relates to a technique of relatively evaluating and controlling illumination energy of laser light.

"Low-temperature processes" are now being developed to manufacture a liquid crystal panel using polysilicon thin-film transistors (TFTs). This is intended to suppress the cost of a liquid crystal panel itself by using a low-temperature process, which allows use of a glass substrate with which a large-size substrate can be obtained at a low cost.

To realize a low-temperature process, the key subject is to crystallize an amorphous silicon film formed on a glass substrate by a heating process of less than about 600°C, a temperature range in which the glass substrate can endure. There is known a low-temperature process in which an amorphous silicon film is formed on a glass substrate by CVD and converted to a crystalline silicon film by illumination with excimer laser light. In this process, the amorphous silicon film is crystallized by instantaneously rendering the surface and its vicinity of the amorphous silicon film into a molten state.

A crystalline silicon film that has been crystallized by illumination with laser light, particularly excimer laser light, is advantageous in that it is close and has superior electrical characteristics. Further, a substrate receives very little thermal damage. However, the excimer laser light

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